

What Is Claimed Is:

1 1. A method for transferring a data flow according to a multi-layer protocol
2 including an application layer in which an application is executing, and a plurality
3 of lower level layers, the method of transferring data flow by creating a physical
4 connection on a packet radio service of a telecommunication system including a
5 network and at least one mobile station, said physical connection for
6 transferring data packets on a packet data channel, wherein the data flow of
7 said data packets comprises at least one active data transfer period,
8 characterized in that the physical connection must be set up and released by
9 setup and release information that defines and signals the set up and release of
10 the physical connection, and wherein the set up and release of the physical
11 connection is defined and signaled from the application executing in the
12 application layer to a lower level layer of the multi-layer protocol so that the
13 control events for setup and release of the physical connection are based upon
14 requirements of the application that is executing in the application layer.

1 2. A method according to claim 1, characterized in that the lower level layer
2 that receives said setup and release information from the application executing
3 in the application layer is the radio link control/medium access control
4 (RLC/MAC) layer.

1 3. A method according to claim 1, characterized in that the lower level layer
2 that receives said setup and release information from the application executing
3 in the application layer is the radio link control (RLC) layer.

1 4. A method according to claim 1, characterized in that the lower level layer
2 that receives said setup and release information from the application executing
3 in the application layer is the medium access control (MAC) layer.

1 5. A method according to claim 1, characterized in that the setup and
2 release information is transferred on the packet data channel.

1 6. A method according to claim 1, characterized in that the method of
2 transferring data flow requires generation of a packet data protocol (PDP) upon
3 initiation of the application, wherein at least part of the context information is
4 communicated to a radio link control/medium access control (RLC/MAC) layer
5 through the protocol stack; wherein the physical connection is not released
6 during an inactive period if the application executing in the application layer is
7 determined to be a specific traffic type application.

1 7. A method according to claim 6, characterized in that the data flow is
2 arranged to consist of data blocks, and said setup and release information is
3 transferred in a header of a data block.

1 8. A method according to claim 7, characterized in that the radio service is
2 GPRS and the header is a MAC header of an RLC block.

1 9. A method according to claim 1, characterized in that the radio service is
2 GPRS and further characterized in that if the application executing in the
3 application layer transfers specific traffic type data, the application notifies
4 GPRS protocols in order to set up a Temporary Block Flow (TBF) of a special
5 type that will not be released if an inactive period occurs that is less than a
6 predetermined amount.

1 10. A method according to claim 9, wherein there is a set of special type
2 TBFs, and wherein the application sets up a special type TBF based upon
3 requirements of the application.

1 11. A method according to claim 9, characterized in that the application
2 executing in the application layer notifies the GPRS protocol of the special type
3 of TBF upon initialization of the application.

1 12. A method according to claim 11, characterized in that the application
2 executing in the application layer notifies the GPRS protocol of the special type

3 of TBF by using the same path as for data messages generated by the
4 application.

1 13. A method according to claim 12, wherein the GPRS protocol upon receipt
2 of notification to set up a special type of TBF, transfers the notification to the
3 RLC/MAC layer to ensure that the RLC/MAC initiates the special type of TBF
4 even if the application executing in the application layer does not communicate
5 directly with the RLC/MAC layer.

1 14. A method according to claim 11, characterized in that the method of
2 transferring data flow requires generation of a packet data protocol (PDP) upon
3 initiation of the application executing in the application layer, wherein at least
4 part of the context information is communicated to a radio link control/medium
5 access control (RLC/MAC) layer through the protocol stack; further
6 characterized in that the application notifies the GPRS protocol of the special
7 type of TBF by using a specific control path used for activating and deactivating
8 the PDP.

1 15. A method according to claim 14, wherein the GPRS protocol upon receipt
2 of notification to set up a special type of TBF, transfers the notification to the
3 RLC/MAC layer to ensure that the RLC/MAC initiates the special type of TBF
4 even if the application executing in the application layer does not communicate
5 directly with the RLC/MAC layer.

1 16. A method according to claim 9, characterized in that the application
2 executing in the application layer notifies the GPRS protocol of the special type
3 of TBF only when a specific traffic type transfer is about to start.

1 17. A method according to claim 16, characterized in that the application
2 executing in the application layer notifies the GPRS protocol of the special type
3 of TBF by using the same path as for data messages.

1 18. A method according to claim 13, wherein the GPRS protocol upon receipt
2 of notification to set up a special type of TBF, transfers the notification to the
3 RLC/MAC layer to ensure that the RLC/MAC initiates the special type of TBF
4 even if the application executing in the application layer does not communicate
5 directly with the RLC/MAC layer.

1 19. A method according to claim 16, characterized in that the method of
2 transferring data flow requires generation of a packet data protocol (PDP) upon
3 initiation of the application executing in the application layer, wherein at least
4 part of the PDP context is communicated to a radio link control/medium access
5 control (RLC/MAC) layer through the protocol stack; further characterized in that
6 the application notifies the GPRS protocol of the special type of TBF by using a
7 specific control path used for activating and deactivating the PDP.

1 20. A method according to claim 16, characterized in that the method of
2 transferring data flow requires initialization of a packet data protocol (PDP)
3 before the application is executed, wherein at least part of the PDP context
4 information is communicated to a radio link control/medium access control
5 (RLC/MAC) layer through the protocol stack; further characterized in that the
6 application notifies the GPRS protocol of the special type of TBF by using a
7 specific control path used for activating and deactivating the PDP.

1 21. A method according to claim 19, wherein the GPRS protocol upon receipt
2 of notification to set up a special type of TBF, transfers the notification to the
3 RLC/MAC layer to ensure that the RLC/MAC initiates the special type of TBF
4 even if the application executing in the application layer does not communicate
5 directly with the RLC/MAC layer.

1 22. A method according to claim 19, wherein the control path may be
2 different for setup and release of the TBF.

1 23. A method according to claim 10, characterized in that the application
2 executing in the application layer notifies the GPRS protocol of the special type
3 of TBF upon initialization of the application.

1 24. A method according to claim 23, characterized in that the application
2 executing in the application layer notifies the GPRS protocol of the special type
3 of TBF by using the same path as for data messages generated by the
4 application.

1 25. A method according to claim 24, wherein the GPRS protocol upon receipt
2 of notification to set up a special type of TBF, transfers the notification to the
3 RLC/MAC layer to ensure that the RLC/MAC initiates the special type of TBF
4 even if the application executing in the application layer does not communicate
5 directly with the RLC/MAC layer.

1 26. A method according to claim 23, characterized in that the method of
2 transferring data flow requires generation of a packet data protocol (PDP) upon
3 initiation of the application executing in the application layer, wherein at least
4 part of the PDP context information is communicated to a radio link
5 control/medium access control (RLC/MAC) layer through the protocol stack;
6 further characterized in that the application notifies the GPRS protocol of the
7 special type of TBF by using a specific control path used for activating and
8 deactivating the PDP.

1 27. A method according to claim 26, wherein the GPRS protocol upon receipt
2 of notification to set up a special type of TBF, transfers the notification to the
3 RLC/MAC layer to ensure that the RLC/MAC initiates the special type of TBF
4 even if the application executing in the application layer does not communicate
5 directly with the RLC/MAC layer.

1 28. A method according to claim 10, characterized in that the application
2 executing in the application layer notifies the GPRS protocol of the special type
3 of TBF only when a specific traffic type transfer is about to start.

1 29. A method according to claim 28, characterized in that the application
2 executing in the application layer notifies the GPRS protocol of the special type
3 of TBF by using the same path as for data messages.

1 30. A method according to claim 25, wherein the GPRS protocol upon receipt
2 of notification to set up a special type of TBF, transfers the notification to the
3 RLC/MAC layer to ensure that the RLC/MAC initiates the special type of TBF
4 even if the application executing in the application layer does not communicate
5 directly with the RLC/MAC layer.

1 31. A method according to claim 28, characterized in that the method of
2 transferring data flow requires generation of a packet data protocol (PDP) upon
3 initiation of the application executing in the application layer, wherein at least
4 part of the PDP context information is communicated to a radio link
5 control/medium access control (RLC/MAC) layer through the protocol stack;
6 further characterized in that the application notifies the GPRS protocol of the
7 special type of TBF by using a specific control path used for activating and
8 deactivating the PDP.

1 32. A method according to claim 28, characterized in that the method of
2 transferring data flow requires initialization of a packet data protocol (PDP)
3 before the application is executed, wherein at least part of the PDP context is
4 communicated to a radio link control/medium access control (RLC/MAC) layer
5 through the protocol stack; further characterized in that the application notifies
6 the GPRS protocol of the special type of TBF by using a specific control path
7 used for activating and deactivating the PDP.

1 33. A method according to claim 31, wherein the GPRS protocol upon receipt
2 of notification to set up a special type of TBF, transfers the notification to the
3 RLC/MAC layer to ensure that the RLC/MAC initiates the special type of TBF
4 even if the application executing in the application layer does not communicate
5 directly with the RLC/MAC layer.

1 34. A method according to claim 1, characterized in that the radio service is
 2 GPRS and further characterized in that if the application executing in the
 3 application layer transfers specific traffic type data, the application notifies
 4 GPRS protocols in order to set up a Temporary Block Flow (TBF) that will not be
 5 released if an inactive period occurs that is less than a predetermined amount.

1 35. A method according to claim 34, characterized in that the application
 2 executing in the application layer notifies the GPRS protocol of the special type
 3 of TBF upon initialization of the application.

1 36. A method according to claim 35, characterized in that the application
 2 executing in the application layer notifies the GPRS protocol of the special type
 3 of TBF by using the same path as for data messages generated by the
 4 application.

1 37. A method according to claim 36, wherein the GPRS protocol upon receipt
 2 of notification to set up a special type of TBF, transfers the notification to the
 3 RLC/MAC layer to ensure that the RLC/MAC initiates the special type of TBF
 4 even if the application executing in the application layer does not communicate
 5 directly with the RLC/MAC layer.

1 38. A method according to claim 35, characterized in that the method of
 2 transferring data flow requires generation of a packet data protocol (PDP) upon
 3 initiation of the application executing in the application layer, wherein at least
 4 part of the PDP context information is communicated to a radio link
 5 control/medium access control (RLC/MAC) layer through the protocol stack;
 6 further characterized in that the application notifies the GPRS protocol of the
 7 special type of TBF by using a specific control path used for activating and
 8 deactivating the PDP.

1 39. A method according to claim 38, wherein the GPRS protocol upon
 2 receipt of notification to set up a special type of TBF, transfers the notification
 3 to the RLC/MAC layer to ensure that the RLC/MAC initiates the special type of

4 TBF even if the application executing in the application layer does not
5 communicate directly with the RLC/MAC layer.

1 40. A method according to claim 34, characterized in that the application
2 executing in the application layer notifies the GPRS protocol of the special type
3 of TBF only when a specific traffic type transfer is about to start.

1 41. A method according to claim 40, characterized in that the application
2 executing in the application layer notifies the GPRS protocol of the special type
3 of TBF by using the same path as for data messages.

1 42. A method according to claim 37, wherein the GPRS protocol upon receipt
2 of notification to set up a special type of TBF, transfers the notification to the
3 RLC/MAC layer to ensure that the RLC/MAC initiates the special type of TBF
4 even if the application executing in the application layer does not communicate
5 directly with the RLC/MAC layer.

1 43. A method according to claim 40, characterized in that the method of
2 transferring data flow requires generation of a packet data protocol (PDP) upon
3 initiation of the application executing in the application layer, wherein at least
4 part of the PDP context information is communicated to a radio link
5 control/medium access control (RLC/MAC) layer through the protocol stack;
6 further characterized in that the application notifies the GPRS protocol of the
7 special type of TBF by using a specific control path used for activating and
8 deactivating the PDP.

1 44. A method according to claim 40, characterized in that the method of
2 transferring data flow requires initialization of a packet data protocol (PDP)
3 before the application is executed, wherein at least part of the PDP context is
4 communicated to a radio link control/medium access control (RLC/MAC) layer
5 through the protocol stack; further characterized in that the application notifies
6 the GPRS protocol of the special type of TBF by using a specific control path
7 used for activating and deactivating the PDP.

1 45. A method according to claim 43, wherein the GPRS protocol upon receipt
 2 of notification to set up a special type of TBF, transfers the notification to the
 3 RLC/MAC layer to ensure that the RLC/MAC initiates the special type of TBF
 4 even if the application executing in the application layer does not communicate
 5 directly with the RLC/MAC layer.

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a1 2 46. A method according to claim 1, characterized in that the application
 3 executing in the application layer generates a special format data packet that
 4 designates that the physical connection is not to be released upon the
 5 occurrence of an inactive period less than predetermined amount, further
 6 characterized in that the data packets generated by the application are observed
 7 by a special protocol (snooper) such that if said special format data packet is
 observed, a special type of Temporary Block Flow (TBF) is set up.

1 47. A method according to claim 1, characterized in that the application
 2 executing in the application layer generates a special format data packet that
 3 designates that the physical connection is not to be released upon the
 4 occurrence of an inactive period less than predetermined amount, further
 5 characterized in that the data packets generated by the application are observed
 6 by a special protocol (snooper) such that if said special format data packet is
 7 observed, Temporary Block Flow (TBF) is set up.

1 48. A method according to claim 46, characterized in that the application
 2 generates a special format data packet that contains a quality-of-service (QoS)
 3 parameter in the RLC/MAC header of the first generated data packet by said
 4 application executing in the application layer.

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